Economic Council
of Canada

Conseil économique
du Canada

Working Paper
Document de travail

Working Paper No. 15

Interregional Variations in the General Level of Prices in 1988

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1991

ISSN 1180-3487

92-05315/

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Foreword

The problem of regional disparity has been one of the more persistent features of Canada's socio-economic landscape. The uneven patterns of unemployment and income continue, in spite of a long history of policy measures – both federal and provincial – designed to eliminate them.

The Economic Council of Canada has investigated the problem over the years and has made numerous contributions to the debate on regional economic imbalances through its publications - *Living Together* (1977), *Newfoundland: From Dependency to Self-Reliance* (1980), *Western Transition* (1984), and more recently *From the Bottom Up*, a Council statement released in 1990.

The need for more analysis of interregional price index differences became apparent during the research planning for *From the Bottom Up*. Although Statistics Canada publishes partial price indexes for metropolitan areas, there are no comprehensive indexes available. This working paper represents a first attempt at a set of such indexes, as far as it is known. They will help to fill a longstanding gap in the statistical armamentarium on regional disparities.

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Judith Maxwell
Chairman

1 Introduction

> "Another complication in comparing per capita incomes among regions is that price levels will generally differ, leading to differences in real incomes even if nominal incomes were the same. Some of these effects are offsetting, for while manufactured goods prices are higher in the Atlantic provinces due to transportation costs, housing costs and such things as commuting costs are lower. Empirical research is required to determine if major differences exist."[1]

This paper offers measures of the cost of a standard basket of goods and services in ten cities in Canada. Statistics Canada produces price indexes for only a partial standard basket for some 11 major cities in the country, but does not offer a complete picture. The comparative prices for a good third of the items of the standard basket are not available. Among these are housing costs, both owner-occupied and rents, and the cost of clothing.

Fully accurate estimates of the missing items turn out to be neither conceptually nor practically feasible. This paper offers, therefore, approximate but useful estimates and incorporates them into the published indexes.

We have made use of a variety of published and unpublished material. Our calculations require a number of assumptions, some of them seemingly arbitrary, but which we feel are far from unreasonable. We think that our results will nevertheless be useful. Those who wish to go straight to them will find them in Table 16, and a discussion of them in Chapter 7. We hope also that this paper will contribute to discussion of methodology and concepts, and thereby to better and more accurate measures of intercity price differentials.

2 Some Conceptual Issues

As noted, we intend to measure the cost of a standard basket of goods and services in ten cities. We shall divide the costs so obtained by their average across cities, and call the resulting numbers, when multiplied by 100, "intercity price indexes."

These indexes are an approximation to the varying monetary cost across cities of some kind of average individual attaining a given level of utility. It is this varying cost of attaining a given utility level that a price index would ideally measure.

If one were prepared to make assumptions about an appropriate utility function for a "representative" individual, "appropriate" including deciding for which place utility should be the standard, one could do considerably better than simply costing a standard basket in different places. The basket might then be varied from place to place, with the same utility being obtained in each place by varying the quantities consumed in accordance with varying relative prices, and varying circumstances, such as climate. We have not considered such a refinement. Our justification is not only that agreement is hard to reach on what would be a representative utility function. It is also that practice has to some extent hallowed the notion of the varying cost of a standard basket rather than of a standard utility level. The concept of costing out a standard basket is easy to grasp, and it is widely used for calculating price indexes through time, despite its faults, especially that it usually overstates price increases, giving only an upper bound to the lowest cost of staying on the same indifference curve. Despite this and other problems,[2] it will be very useful to have intercity price indexes based on costing out a standard basket in each place.

In calculating the varying cost of a standard basket one major and one minor conceptual difficulty arise. The major difficulty stems from the need to include in the standard basket the services of a home to live in. If the home is purchased, rather than rented, the possibility of capital gains or losses arises.[3] If we were prepared to assume a perfectly operating capital market, we could simply use rental rates as the proper measure of housing cost. Renting and ownership would be perfectly equivalent. If we are not prepared to make that assumption - and we are not - we are forced to confront the problem of what to do about capital gains on owner-occupied housing.[4]

Two extreme possibilities presented themselves to us. One was to ignore capital gains. The justification here would be that capital gains are income, and should be allowed for in the calculation of income. Allowing them to influence estimates of price levels is misleading, in this view. Suppose, for example, that capital gains are higher in one city than another. It may be better to say that incomes of homeowners are higher in that city, not that the true costs of housing are lower. That is a defensible view, and price indexes based on following it are labelled "Concept 1" indexes.

The other extreme view is to count capital gains as a full offset against the cost of purchasing the services of a home to live in. In practical terms, we know that income will not be properly calculated, so that Concept 1 indexes, which ignore this fact, will be misleading guides to how cheap or costly it is to live in one place rather than another. Capital losses especially are arguably as much a part of the cost of operating a home as repairs, taxes, insurance, and so on. If losses are a positive cost item, gains should be a negative cost item; i.e., capital gains should be considered as lowering the cost of purchasing the services of a home that one happens to own. Treating capital gains in this way leads us to what we call "Concept 2" price indexes.

We discuss the relative merits of Concepts 1 and 2 further in subsection 3.2.7.2. We conclude that the most defensible index is a compromise between Concepts 1 and 2, but we give all three in this paper, Concept 1, Concept 2, and an appropriately weighted average, so as to permit readers to make their own judgement.

The minor conceptual difficulty concerns the averaging of owners and renters. The national Consumer Price Index (CPI) uses a weight that averages across owners and renters. However, people are either one or the other, not two thirds the one and one third the other, as the weighting system implies. We decided that a more conceptually satisfactory procedure is to calculate separate indexes for owners and renters, and then to calculate a weighted average of the two.

The structure of the rest of the paper is as follows. First, we explain at length the nature of our data on housing costs (Chapter 3). Then we do the same for clothing costs (Chapter 4) and some other items not available from Statistics Canada (Chapter 5). In Chapter 6 we explain the methodology for calculating the varying cost across cities of the baskets for either renters or homeowners, and assemble the results to calculate the overall intercity indexes. The key results are in Table 16. In Chapter 7 we discuss the results and draw conclusions.

3 The Data On Housing Costs

The absence of housing costs from current intercity price indexes is their most serious drawback. The combined weight of rented and owner-occupied housing accommodation in the national CPI, as established by Statistics Canada, is large, 21.31 per cent. Housing cost is also likely to differ regionally more than other items; land being immobile and in fixed supply.

Ideally, to undertake a rigorous place-to-place comparison of housing costs, the types of housing accommodation priced, whether owned or rented, would have to be selected to possess identical qualities and characteristics. One would want to have qualitative characteristics, such as the age and size of the dwelling, the desirability of location, the proximity of public transportation, and the different features and amenities which are included in the rent, all equally represented in the sample of each city. Unfortunately, no data based on such criteria, systematically collected, are available. Nevertheless, while ideal numbers are not possible, we believe that workable approximations can be found. We describe in this chapter the data we shall use, covering first rental accommodation, then owner-occupied housing.

3.1 Rental Accommodation

Statistics Canada does collect some rental data for major cities in the country for use in building the national CPI. They stress, however, that these data are adequate only as indicators of *change* in housing costs, for precisely the reasons adumbrated above. Statistics Canada therefore uses them only in calculating national price changes from month to month, not the levels across cities.

In the absence of any other rental data we decided nevertheless to use these rental data. In our view, with some caveats discussed below, they do allow some reasonable spatial comparison, and are therefore appropriate for use in this paper, even though we agree with Statistics Canada that they are too imperfect to form the basis of official estimates.

Statistics Canada's Prices Division, with appropriate caveats, provided us with a city-by-city sample selection of rentals, collected as a by-product of the Labour Force Survey. This special tabular material gave the average rents in September 1988 for apartments constructed in or after 1950, for 10 cities: St. John's, Charlottetown, Halifax, Saint John, Montreal, Toronto, Winnipeg, Regina, Edmonton, and Vancouver. Subsidized rents or rents of premises used for business purposes were excluded from the database.[5]

We thus have available the average rent paid for one- and two-bedroom apartments. The average is based on apartments for which heat, a stove, and a refrigerator are included in the rents paid, as well as on apartments where these amenities are excluded from the rents paid. For each of the selected cities we average the price of rents for the four types of accommodation to obtain an average cost of rent for that city. The intercensal estimates of Census Metropolitan Areas provide us with population levels for each city, which we use as weights to calculate the relative average cost price of rents.[6]

To reiterate, these data are imperfect. Our problem is that they contain apparent inconsistencies, as can be observed from Table 1. In a number of cases, such as St. John's, the rent for a one-bedroom apartment without heat, stove, and refrigerator appears to be higher than the rent for a one-bedroom apartment including these amenities. Nevertheless, it is quite obvious that a tenant in Toronto pays substantially more for rental accommodation than his or her counterpart in St. John's.

Table 1

Weighted Average Rents, Various Cities, Canada, September 1988

	One-bedroom apartment, heat/stove/fridge		Two-bedroom apartment, heat/stove/fridge		Average rental cost	Relative rental cost[1]
	Included	Excluded	Included	Excluded		
	(Dollars per month)					
St. John's	342	418	432	474	417	89.0
Charlottetown	364	362	477	474	419	89.4
Halifax	431	430	522	543	482	102.9
Saint John	397	354	368	359	370	79.0
Montreal	405	355	500	408	417	89.0
Toronto	466	465	582	583	524	111.8
Winnipeg	401	402	483	490	444	94.8
Regina	401	401	446	446	424	90.4
Edmonton	374	374	467	465	420	89.6
Vancouver	462	460	541	541	501	106.9

1 Relative to a population-weighted average.

Source Statistics Canada, special tabulations, Prices Division.

More importantly, these rental data are conceptually unsound, in two ways. First, and a major problem, expenditures are being measured, not prices of standard items. As is well known, quantities purchased will tend to be high, *ceteris paribus*, where prices are relatively low, and conversely. As can be readily shown, relative expenditure data will understate true relative differences in housing costs, unless elasticities of demand in both places are zero. However, if the housing demand elasticities with respect to price are significantly less than unity, the understatement will not be major.

Second, rent costs are standardized for number of bedrooms and certain utilities, but not for size, location, age of building, nor amenities included in rents. This is because the data are the result of a survey piggy-backed onto the Labour Force Survey questionnaire, and so are not designed specifically for the purpose of spatial comparison - as the Prices Division people at Statistics Canada distinctly pointed out to us.

Despite these shortcomings, the data seem likely to pick up a good part of the true cost differences in rental accommodation in various cities, especially as housing demand is probably inelastic.[7] This is much better than nothing. An

improved estimate could be made using corrections based on estimated housing-price elasticities of demand, but we did not attempt this. The present rental index shows that costs of renting differ from place to place, and that as expected, these costs are higher in Toronto and Vancouver. Somewhat surprisingly, perhaps, Montreal is well below average and Halifax somewhat above. Rents are below average in the rest of the Atlantic region, and also in the Prairie provinces.

3.2 Owner-occupied Housing

Costs of owner-occupied housing include interest paid on the mortgage, property taxes, cost of insurance, repairs, and, less readily recognized by the person in the street, forgone interest on equity (referred to by economists as an opportunity cost), and capital consumption. For example, a person purchasing a house for cash, without the burden of a mortgage, could instead invest that amount of money in an interest-earning instrument and thus obtain income. Similarly, the unmortgaged part of the purchase value of the dwelling could also be invested to earn income. By buying a house, the owner forgoes this type of income, thus incurring an economic cost. As discussed above, capital gains might be considered a negative cost item, and losses a positive one. We deal with all these items in this section, after a discussion of the market value of houses themselves, needed as input to many of the other costs. We also discuss, at the end of the section, the relative proportions of various types of house, needed as inputs on the quantity side of the "basket" that we price in each city.

3.2.1 Market Values of Houses

To find market values of houses, we drew largely on the Survey of Canadian House Prices published by Royal LePage Real Estate Services, which provided extensive information on housing prices in major cities and metropolitan areas of the ten provinces.[8] The survey reflects Royal LePage's estimates of "fair market value" of certain housing types in each location.

Time and resource constraints did not permit us to analyse data for every type of house for which Royal LePage provided information. Instead, we restricted the analysis to the five most common ones. These are conventionally described as: standard town-house, detached bungalow, standard two-storey house, executive detached two-storey house, and senior executive house.

We needed to establish the market value of each type of dwelling in each selected city. Naturally, prices for housing vary within each city and metropolitan area since the desirability of location has a major influence on real-estate values. Ideally, corrections for the quality-of-location characteristics would be appropriate in estimating the relative average price of a given

type of housing accommodation in each city. We really need a hedonic price index, with location being one of many important defining characteristics of the "bundle" of qualities which any given house represents. Evidently, a detailed investigation of housing prices in various locations with specified quality characteristics would have to be undertaken in such a case. An exercise of this kind would be prohibitively time and resource consuming. Moreover, numerous detailed calculations and arbitrary assumptions would have to be made for each of many neighbourhoods and suburbs; the Toronto area alone has more than two dozen. We decided, therefore, that the best way to proceed was to calculate for each city a simple arithmetic average price over all areas, for each type of dwelling separately, since any other procedure appeared to us even more arbitrary.

3.2.2 Mortgage Interest Paid

Certainly, few dwellings are bought outright with cash; the vast majority of them are purchased through financing, primarily by means of a mortgage. Some buyers may need to borrow only a small portion of the purchase price, others a larger one. In the case of most first-time buyers, the purchase of a house means procuring a mortgage to the full extent that a prudent financial institution is prepared to offer; in the industry the conventional maximum amount of mortgage is around 80 per cent of the value of the property. We assumed, for simplicity, that any dwelling at initial purchase would carry a maximum amount of mortgage, and we took that maximum to be 80 per cent of the purchased property's value.

Clearly, not all owners of houses carry a full mortgage at any given time; some have paid it off, some are half way through paying for their equity, others still have just committed themselves to a full mortgage. We assume, again for simplicity's sake, that on average the mortgages are half paid-off at any given point in time. Consequently, we estimate the amount of interest cost per year as that due on half of the mortgaged value of the house.[9] The mortgage rate of interest used is 11.75 per cent, the prevailing rate for a one-year mortgage from chartered banks in the fall of 1988. Nominal rates were used; this is justified below, when capital gains are discussed. In the case of Halifax, for example, the estimated average price of a detached bungalow in 1988 was $110,375; the interest payment on a mortgage for 40 per cent of this amount would be $5,188.

3.2.3 Forgone Interest on Equity

In the world of choices a person may decide not to own a house, but instead to invest the money in some interest-earning financial instrument. However, it is unlikely that the investment instrument that a private individual could purchase would earn the same rate of return as the prevailing mortgage rate charged by chartered banks. Financial markets provide, of course, numerous

and diverse opportunities for investment. Moneys could be used to purchase a first mortgage at a rate equal to the prevailing mortgage lending levels; guaranteed investment certificates offer a convenient and low-risk investment at about 1 to 1½ percentage points lower than a first mortgage. Government of Canada short-term bonds could be the choice of some. Although these bonds earn interest, on average, at a rate 1½ to 2 percentage points below the prevailing mortgage rate, they provide a safe and risk free investment. On the other hand, corporate bond rates would be somewhat higher than the government bond rate by, say, ½ to 1 percentage point; however, they represent a slightly higher risk. For the more adventuresome, a second mortgage might be considered as the way to go in order to earn an above average return. That kind of instrument could fetch at least 2 percentage points more than a more conservative regular first mortgage would. All in all, we are looking at a spread of, roughly speaking, 2 percentage points above, and 2 percentage points below the prevailing mortgage rates charged by the chartered banks.

While there are undoubtedly some who would invest in higher risk financial paper, the majority would likely be more inclined to buy less risky instruments such as guaranteed investment certificates and bonds, which may not match the rate of interest that chartered banks charge for mortgages, but which offer, nonetheless, a safe and adequate return.

Obviously, it would be impossible, even hypothetically, to allocate the potential amounts of alternative investment moneys to any of the variety of possible investment vehicles, each earning a different rate of return, in order to coin an average rate of interest for each of the cities under consideration. Therefore, we feel it is reasonable to assume the rate of return to be 1 percentage point below the mortgage rate, which we mentioned above to be 11.75 per cent. Consequently, we apply a 10.75 per cent rate as the average opportunity interest return on equity sunk in owner-occupied housing (recall that this is for the year 1988). We suppose that this equity amounts on average to 60 per cent of the value of the house. The figure of 60 per cent follows from two assumptions, one made above in which we propose that half of the mortgage is paid off any given time, and a second assumption that a further 20 per cent will come from the portion that the buyer would usually have to pay in cash by way of a downpayment.

In calculating the opportunity cost of equity, it is also necessary to make allowances for taxes that would be due on earned income. To estimate the marginal tax rates that individuals would pay on earned income in various income brackets in each province, we do the following. Revenue Canada distinguished three basic classifications or brackets of taxable income in 1988: $27,500 or less, more than $27,500 and less than $55,000, and $55,000 or more. For each of these brackets we add up the applicable basic federal tax rate, the federal surtax, and the provincial tax rates, as they vary from province to province, to coin the marginal tax rate for each of the respective brackets.

Since taxable income is stratified into only three basic brackets and we are dealing with five types of housing, we apply the marginal tax rates to homeowners of various kinds in the following way. We assume that those who own townhouses, detached bungalows, and standard two-storey houses would, by and large, fall into the first bracket; i.e., having a taxable income of up to $27,500; owners of executive two-storey houses would likely be found within the second bracket, with taxable income of more than $27,500 but less than $55,000; and lastly, owners of senior executive houses would be in the upper bracket, which covers those whose taxable income is higher than $55,000.[10] The imputed rate of interest earned is then reduced by marginal rates according to the type of house, in order to arrive at interest income forgone, net of taxes.

3.2.4 Property Taxes

Data on property taxes paid in 1988 were also provided by the Royal LePage Survey of Canadian House Prices. The level of property taxes, in a similar fashion as the market prices of houses, reflects the quality characteristics of each type of dwelling and the desirability of its location. Ideally, for property taxes too, some appropriate correction for these factors would be desirable. As we pointed out earlier in this text, this kind of exercise would be very costly of resources, so we decided simply to take an unweighted arithmetic mean of the property taxes paid on the various types of dwelling in different locations within each city or metropolitan area, as we did in the case of prices of housing.

3.2.5 Cost of Insurance

A significant portion of the premium for a home owner's insurance policy is attributable to forms of protection other than the straightforward fire protection of the structure. Among these we find the coverage for personal property, loss of use, personal liability, detached private structures, and others. Since we were interested only in the cost of protection of the structure of the house itself and not the contents, we had to isolate that portion of the premium cost which pays for the protection of the insured from the loss of the dwelling due to hazards such as fire. Insurance companies generally exclude the foundation part of the house from the coverage. After consulting with a number of people in the insurance brokerage business, we found it reasonable to peg the protection cost factor at 0.2 per cent of the replacement cost. By replacement cost, we mean the cost of rebuilding the house above ground; i.e., excluding the foundation. While the prices of building materials such as lumber, bricks, dry wall, and siding may differ to some extent from region to region, we nonetheless assumed the building costs to be more or less the same across the country. We consulted with people in the construction industry in the Ottawa area with regard to the cost of construction for different type of housing. (Remarkably, in some real estate industry quarters, the cost of housing in Ottawa is considered to be very close to the national average.) Naturally, the various quotations

for construction costs were not identical among the builders although they did not differ dramatically. After due consideration of several diverse sources, we settled for the following estimates for the year 1989: about $45 per square foot for a standard townhouse, $50 for a detached bungalow and a standard two-storey house, $55 for an executive two-storey house, and $60 for a senior executive house. The differences in cost per square foot among various types of dwellings capture the variations in the quality of fixtures and the number of facilities. The senior executive house is likely to have more and larger bathrooms, better quality broadloom, and a larger kitchen than, say, a standard two-storey house. We then applied the cost per square foot to the total area of the house for each type of dwelling to obtain an approximate total cost of construction for the designated cities, from which we in turn derived the insurance charges.

3.2.6 Cost of Repairs and Depreciation

The same cost of construction was used also as a basis to calculate the cost of repairs and the value of capital consumption, or depreciation of each type of dwelling. We estimate the combined costs of repairs and depreciation to amount to roughly 5 per cent of the construction cost per year, of which 4 per cent is notionally attributed to depreciation and 1 per cent to repairs; again we assumed this cost to be the same in all cities under consideration. While the 5 per cent is arbitrary, it seems unlikely to seriously bias the picture of intercity cost variation; the key point is that the percentage not differ markedly from one city to another, and we think that is likely to be the case.

3.2.7 Capital Gains

Two issues arise here. First, how should capital gains be calculated? Second, should they be included as a negative item in calculating the cost of purchasing housing services by a homeowner?

3.2.7.1 Calculation of Capital Gains – In calculating the cost of purchasing the housing component of the standard basket, a problem of real versus nominal capital gains may appear to arise.

The basket is conventionally defined as a years' worth of consumption of the items in it. If we subtract capital gains from the cost of the housing component of the basket, this means subtracting the gains over a twelve-month period. For intercity indexes, the gains in each place would be subtracted. The problem that arises is whether it should be nominal or real gains that should be so subtracted.

Suppose the gain in nominal terms in a particular city is $10,000 over the year, on a house of $100,000 value at the mid-point of the year; i.e., 10 per cent. Suppose further that the actual (nominal) mortgage interest rate is 17 per cent. Suppose other costs are $20,000 over the year. Then, net of capital gains, and in current dollars, the total cost over the year is:

-$100,000 • (10 per cent) + $100,000 • (17 per cent) + $20,000,
= -$10,000 + $17,000 + $20,000
= $27,000.

If we do the calculations of capital gains and mortgage interest rates in real terms, the real interest rate becomes 17 per cent *minus* the expected rate of inflation, and the real capital gain becomes 10 per cent *minus* the expected rate of inflation. Let the rate of expected inflation, as a percentage per annum, be p*. Then, using real interest rates and real capital gains, the cost over the year becomes:

-$100,000 • (10 per cent - p*) + $100,000 • (17 per cent - p*) + $20,000
= $27,000.

This is the same result as before. Looking at why this is so makes it clear that the correction necessary, to go from nominal to real interest rates and capital gains, is such that the expected rate of inflation will always cancel out. The cost of the basket will therefore be invariant to whether we use real or nominal concepts in the evaluation of interest charges and capital gains, as long as we are consistent. We use nominal in this paper, as being more convenient.

A second point regarding the calculation of capital gains should be clarified. In calculating our indexes, which refer to the year 1988, we did not use nominal capital gains of 1988, but an estimate of a "typical" value of capital gain. We took the average gain of the last ten years, since capital gains are quite volatile year to year. This is analogous to correcting any price in the basket that is considered to be a poor indicator of the typical price. That would normally be a bad procedure - prices are what they are, and statisticians normally record "what is," not their judgement of "what is normal." In this case we felt justified in departing from standard practice.[11] A parallel in the nonhousing part of the basket would be if fuel prices were very volatile everywhere, and the volatility were not synchronized across cities. Average fuel prices over a few years would then give a more defensible picture of intercity differences in the cost of the fuel component of the basket than fuel prices in the particular year being analysed. As with this hypothetical fuel example, so with capital gains.

3.2.7.2 Should Capital Gains Be Included at All? – How should capital gains be treated in assessing the costs of purchasing housing services by homeowners? Given the rapid increase of house prices in the 1980s, notably in Toronto, the way we treat capital gains makes a major difference.

As noted above, one possibility is to ignore them, on the grounds they should be counted in measuring income, not in measuring prices. This seems too extreme a position, given that they will not, in practice, be counted as income. But to count them as a full offset to housing costs also seems extreme.

It can be argued that capital gains should not be a full offset. Capital gains dollars seem less valuable than dollars of conventional income. They are business- or economy-class, not first-class dollars. Does that semblance of lower value correspond to reality? We think it does. Capital gains do not offer the opportunity to reach a given indifference curve more cheaply today, but only the prospect, or possibility, of reaching it more cheaply tomorrow, or even the day after tomorrow.

Moreover, a combination of transaction costs and market imperfections prohibits most owners from upgrading their capital gains dollars to first class. No market exists to sell rights to capital gains. We ask the reader to perform a thought experiment, however, regarding such a market. Imagine being a homeowner who is selling the rights to your capital-gains dollars. It is likely that rights to capital-gains dollars will sell for less than a 100 cents. At the same time, the rights to capital-gains dollars will certainly not trade at zero. The thought experiment implies that some offset for capital gains should be made, but it should not be 100 per cent.

The question then arises: how much of an offset? How many cents is a capital-gains dollar worth? A reasonable indication might be found in the literature and practice in the field of taxation. There is no unanimity here, but a rough consensus can be discerned. The Carter Commission argued that capital-gains dollars were income like any other, the "buck is a buck" argument.[12] Under this view, a capital-gains dollar is worth 100 cents. Present practice in Canada is not this extreme, except for speculative gains. Capital-gains income is usually taxed as though it was half as valuable as regular income; i.e., as though a capital-gains dollar was worth 50 cents. Capital gains on principal dwellings, however, are taxed at a zero rate. Other countries display similar patterns, in that capital-gains income is usually taxed at lower rates than ordinary income, but with some variation according to the type of capital-gains income, with residential capital gains often exempt.

It would not seem unreasonable, based on Canadian and foreign tax practices, to argue that capital-gains income is usually treated as if it were worth something in the order of a half of what ordinary income is worth. A problem with this idea is that the frequent exemptions from tax of capital gains on owner-occupied housing seems to imply a social consensus that such gains on housing are worthless to their recipients. If so, their value should logically be set at zero in price-index work. We think, however, that their differential tax treatment relative to normal capital-gains' income can be plausibly explained by factors such as political expediency and a desire to encourage home ownership as a social good. Of course, one might similarly argue that a lower

tax rate on other types of capital gains also reflects a combination of political expediency and a desire to encourage investment as a social good. If so, 50 cents on the dollar would then represent too low an evaluation of what capital gains are intrinsically worth to their recipients. The 100-per-cent tax on speculative capital gains supports this view.

It is clear that no single value put on a capital-gains dollar, whether generally or in the case of owner-occupied housing, would command universal agreement. On balance, our own view is that theoretical reasoning, on the one hand, and evidence from taxation theory and practice, on the other, make it *not unreasonable to value capital-gains income on owner-occupied homes at 50 cents on the dollar.*

In our calculations below, we present the resulting index as our preferred one. We obtain it as the simple (unweighted) average of two other indexes, based on evaluating capital gains at zero and at 100 per cent, respectively. These latter indexes are also given, so that a reader can use them to form a different weighted average index from ours, if he or she reaches a different judgement about the appropriate way to deal with capital gains.

3.2.8 Relative Proportion of Each Type of Housing

In order to calculate the varying cost of owner-occupied housing from city to city, we also need some information about how many houses of each type - townhouse, bungalow, etc. - should be in the housing "basket." Then we can weight the cost of each type appropriately. That, in turn, means knowing how many houses of each type there are nationally. Such data do not exist. To get an approximate estimate, we note that normally the level of income determines to a large extent the type of housing a buyer selects among the available housing stock. Thus, we can use income-distribution data to infer, approximately, what proportions of each kind of house are likely to exist. To make such a bridge, we also use the fact that income level is one of the factors determining the maximum amount of mortgage that financial institutions are prepared to extend to potential buyers. In the process of establishing the amount of a mortgage loan, as a rule of thumb, the banks and trust companies apply three times the amount of individual or family annual income as an approximate maximum amount for a mortgage. Thus data on house prices can be used to infer, very approximately, data on family incomes of the owners, if we assume that most families buy up to the limit that their income would sustain according to mortgage company rules. We can then in turn work backwards from income distribution data to "house distribution" data. Proceeding in this fashion, we can arrive at weights to apply for each type of housing within a standardized "housing basket."

To understand the procedure more fully, note first the link from house prices to the owner's income. For example, a townhouse with an average price of

$89,000 would carry a maximum mortgage of 80 per cent of its market value, roughly $71,200. If we use the above rule of thumb, the purchaser's yearly income would, therefore, have to be around $23,700. Similarly, for the next house up – a bungalow priced at $119,000 – the purchaser's yearly income would, in theory, have to be roughly $32,000; and so on. We suppose, therefore, that owners of townhouses would usually have family incomes of above $23,700, but below $32,000; owners of bungalows between $32,000 and $34,400, and so on, to owners of senior executive houses who would need $72,300 and up.

Data on the distribution of families by income groups is available. Using the above information of the link from income to house prices, then, permits an estimate of how many families earned sufficient income to buy a house of their own, and what proportion would be able to buy each type of house. This, in turn, gives estimates of the relative proportions of each type of house, the object of the exercise. The procedure is, of course, very rough, and it involves numerous assumptions. One check on its validity is whether the implied total expenditure on housing (known from the household budget survey) is correct. The initial estimates of the national proportions of each type of house before the check against the household budget survey, were .16 for a standard townhouse, .19 for a bungalow and a standard two-storey house, .27 for an executive two-storey house and, finally, .20 for a senior executive house. These proportions turned out to imply rather greater expenditure on owner-occupied housing than did the household budget survey from which the CPI weights came, even correcting for the fact that our expenditure concept includes imputed interest costs, while the household budget survey does not. We therefore modified our weights, necessarily rather arbitrarily, but the modified levels seem reasonable. The revised weights are: .25 for standard townhouse, bungalow and standard two-storey house, .15 for an executive two-storey house, and .10 for a senior executive house.[13]

4 Data on Clothing Costs

Statistics Canada provided us with matched prices for 31 clothing specifications for eight cities; data for Saint John and Regina were not available. These prices, which were drawn from the May 1989 CPI database, reflect the regular ticket price of items, and do not include provincial sales tax, where applicable. In addition, Statistics Canada provided for each of the selected clothing items the dollar amount of expenditure, which served as implicit weights for these items. In all, the outlays of money by consumers on these items for which we obtained the data represent roughly 50 per cent of the total consumer expenditure on clothing.

For each of the 31 specifications, prices for a number of matching items are provided. For some specifications, we have prices for only a few matched items; e.g., four in the case of fur coats and jackets. For others, we have data

for many matched items; e.g., women's slacks, where data for 15 matched items are available.

Upon examination of prices for some 360 items, we found that for more than three quarters of them the price levels tend to be flat across the country. That is to say that the price tag of a given matched item, such as a men's car-coat in, say, Halifax, would usually be the same as in Vancouver. This state of affairs could be the result, perhaps, of the pricing policies of major national chain stores or manufacturers, whereby a given product, especially if it has a nationally known brand name, tends to be priced equally in every major city in the country.

Not all items, however, cost the same across the land. Roughly 20 per cent of the matched items exhibit some degree of price variation. The difference may vary from as low as 3 per cent to as high as 25 and 30 per cent, although most are in the 5- to 10-per-cent range.

How important are these price differences, and to what extent do they make the overall cost of the clothing share of total basket vary from one city to another? Let us take men's suits as an example: if the price of one matched item out of a selection of 20 is 10 per cent higher in one city than in another, and this specification represents roughly 4 per cent of total spending on clothing (in the country as a whole), how much of a difference would this make in the overall cost of the clothing share of the standard basket in that city? Furthermore, while matched men's suits could be pricier in a given city, shoes, on the other hand, might be cheaper compared to another place. Will it be reasonable to assume, perhaps, that the sum total of price differentials for matched items among the major cities for all clothing items would be insignificant? To find definitive answers to these questions for all possible pairs of cities would have taken immense resources. What we did instead was to carry out a rough comparison between two arbitrarily selected cities, St. John's and Montreal. Detailed inspection of the data for these was done, and approximate calculations made. The result was that the errors induced in the overall clothing index by assuming equal clothing prices (excluding sales tax) would have been negligible (less than 1 per cent). We assume that the same would be true everywhere.

With the vast majority of prices for matched items being to all intents and purposes equal across the major provincial cities, intercity differences in the cost of the clothing basket stem almost exclusively from differences in provincial sales taxes. An index of sales tax differences adjusted for the sales tax exemptions can then serve as an index of clothing cost differences.[14] In 1988, sales tax rates ranged from zero in Alberta to 12 per cent in Newfoundland. In addition, there are also numerous and diverse exemptions to provincial sales taxes which vary across the land. For instance, in New Brunswick all clothing and footwear are sales tax exempt, whereas in Newfoundland and British Columbia there are no sales tax exemptions for clothing and footwear. Some

items are tax exempt in some provinces and not in others; moreover, some items are exempt according to price levels; i.e., no tax is applicable up to a certain price level (in Quebec, for example, no retail sales tax is payable on clothing priced at less than $500, and shoes at below $125), but these items are fully taxed at prices above those levels.[15] Retail sales tax exemption levels, where applicable, enabled us to make rough estimates of the percentage of clothing and footwear expenditure exempt in each province. Weighted percentages of exempt and nonexempt portions of clothing and footwear expenditure were then taken to obtain the intercity index. Given the previously noted near absence of differences among cities in pretax clothing prices, these adjusted rates of sales tax relative to the Canada average give an excellent approximation to the relative cost of clothing "basket" for each city.

5 Data on Costs of Other Items of Consumer Expenditure

Other items for which no published city price indexes are available comprise 10 per cent of the total basket. For them we did the following: for food purchased from restaurants we averaged the indexes published by Statistics Canada for meat, poultry, and fish with that for personal-care services, since in restaurant-served food there is a significant service component. As a proxy for fuel and electricity for principal accommodation, we took the available price index for gasoline. Similarly, for the water component of the principal accommodation we used our estimated index for property taxes. Our own estimates for rent were used as the price index for nonprincipal accommodation.

* * *

The procedures described in Chapters 3 through 5 together yield intercity information on costs of all the individual items in the consumer basket. To recapitulate: for 60 per cent of the items (food purchased from stores; transportation; household operations [furnishings, equipment, etc.]; recreation, reading and education; health and personal care; and tobacco and alcoholic beverages) Statistics Canada already publishes estimates. For housing, clothing, and food in restaurants; water, fuel and electricity for principal accommodation; and nonprincipal accommodation we have the information described above.

We now assemble the information, in the next chapter, to calculate intercity price indexes.

6 Calculating the Cost of the Basket in Different Cities

6.1 Cost of the Homeowners' Basket

The cost of the homeowner's basket includes housing and other items. We split these costs into: (i) housing costs exclusive of capital gains; (ii) costs of nonhousing items; (iii) capital gains (a "negative" cost). We deal with each of these in turn.

6.1.1 Housing Costs Exclusive of Capital Gains

We calculate first, for each city, the cost of the average Canadian "basket" of owner-occupied housing exclusive of capital gains. That average basket has been defined above as 25 per cent of a standard townhouse, 25 per cent of a detached bungalow, 25 per cent of a standard two-storey house, 15 per cent of an executive two-storey house, and 10 per cent of a senior executive house. The costs, excluding capital gains, are detailed in Tables 2 to 11. They include imputed interest after tax, depreciation, and what we call "cash expenditure" in the tables, which covers property tax, insurance, interest other than imputed, and repairs.

In Vancouver, for example those costs in 1988 totalled $21,623 (Table 11), and in Regina they were $14,910 (Table 9).

Table 2

Homeowners' Housing Costs, Concept 1, St. John's

	Cost items			
	Imputed interest (after tax)	Depreciation	Cash expenditure[1]	Total cost
	(Dollars)			
Standard townhouse	2,977	1,800	4,178	8,955
Detached bungalow	4,547	2,400	6,297	13,244
Standard two-storey house	5,619	3,000	7,802	16,421
Executive two-storey house	4,931	4,400	9,257	18,588
Senior executive house	6,181	7,200	12,855	26,236
Weighted average cost[2]	4,644	3,180	7,246	15,070

1 Interest charges other than imputed interest, property taxes, insurance, and repairs.
2 Weights are, in order: .25, .25, .25, .15, .10.

Table 3

Homeowners' Housing Costs, Concept 1, Charlottetown

	Cost items			
	Imputed interest (after tax)	Depreciation	Cash expenditure[1]	Total cost
	(Dollars)			
Standard townhouse	3,108	1,800	4,436	9,344
Detached bungalow	4,473	2,400	6,385	13,258
Standard two-storey house	5,274	3,000	7,564	15,838
Executive two-storey house	5,057	4,400	9,453	18,910
Senior executive house	6,181	7,200	12,855	26,236
Weighted average cost[2]	4,590	3,180	7,300	15,070

1 Interest charges other than imputed interest, property taxes, insurance, and repairs.
2 Weights are, in order: .25, .25, .25, .15, .10.

Table 4

Homeowners' Housing Costs, Concept 1, Halifax

	Cost items			
	Imputed interest (after tax)	Depreciation	Cash expenditure[1]	Total cost
	(Dollars)			
Standard townhouse	4,580	1,800	6,178	12,558
Detached bungalow	5,190	2,400	7,314	14,904
Standard two-storey house	5,417	3,000	7,964	16,381
Executive two-storey house	5,842	4,400	11,032	21,274
Senior executive house	8,151	7,200	16,575	31,926
Weighted average cost[2]	5,488	3,180	8,676	17,344

1 Interest charges other than imputed interest, property taxes, insurance, and repairs.
2 Weights are, in order: .25, .25, .25, .15, .10.

Table 5

Homeowners' Housing Costs, Concept 1, Saint John

	Cost items			
	Imputed interest (after tax)	Depreciation	Cash expenditure[1]	Total cost
	(Dollars)			
Standard townhouse	3,171	1,800	4,616	9,587
Detached bungalow	3,917	2,400	5,768	12,085
Standard two-storey house	4,360	3,000	6,529	13,889
Executive two-storey house	5,044	4,400	9,775	19,219
Senior executive house	7,604	7,200	16,108	30,912
Weighted average cost[2]	4,379	3,180	7,305	14,864

1 Interest charges other than imputed interest, property taxes, insurance, and repairs.
2 Weights are, in order: .25, .25, .25, .15, .10.

Table 6

Homeowners' Housing Costs, Concept 1, Montreal

	Cost items			
	Imputed interest (after tax)	Depreciation	Cash expenditure[1]	Total cost
	(Dollars)			
Standard townhouse	4,285	1,800	7,120	13,205
Detached bungalow	5,096	2,400	8,473	15,969
Standard two-storey house	5,762	3,000	9,435	18,197
Executive two-storey house	7,958	4,400	16,161	28,519
Senior executive house	10,125	7,200	22,145	39,470
Weighted average cost[2]	5,992	3,180	10,896	20,068

1 Interest charges other than imputed interest, property taxes, insurance, and repairs.
2 Weights are, in order: .25, .25, .25, .15, .10.

Table 7

Homeowners' Housing Costs, Concept 1, Toronto

	Cost items			
	Imputed interest (after tax)	Depreciation	Cash expenditure[1]	Total cost
	(Dollars)			
Standard townhouse	9,537	1,800	11,542	22,879
Detached bungalow	11,373	2,400	13,893	27,666
Standard two-storey house	12,095	3,000	14,901	29,996
Executive two-storey house	13,049	4,400	20,609	38,058
Senior executive house	16,119	7,200	27,441	50,760
Weighted average cost[2]	11,821	3,180	15,919	30,920

1 Interest charges other than imputed interest, property taxes, insurance, and repairs.
2 Weights are, in order: .25, .25, .25, .15, .10.

Table 8

Homeowners' Housing Costs, Concept 1, Winnipeg

	Cost items			
	Imputed interest (after tax)	Depreciation	Cash expenditure[1]	Total cost
	(Dollars)			
Standard townhouse	3,254	1,800	5,201	10,255
Detached bungalow	4,849	2,400	7,664	14,913
Standard two-storey house	4,799	3,000	7,665	15,464
Executive two-storey house	5,767	4,400	11,713	21,880
Senior executive house	6,578	7,200	15,125	28,903
Weighted average cost[2]	4,748	3,180	8,402	16,330

1 Interest charges other than imputed interest, property taxes, insurance, and repairs.
2 Weights are, in order: .25, .25, .25, .15, .10.

Table 9

Homeowners' Housing Costs, Concept 1, Regina

	Cost items			
	Imputed interest (after tax)	Depreciation	Cash expenditure[1]	Total cost
	(Dollars)			
Standard townhouse	2,697	1,800	4,245	8,742
Detached bungalow	4,260	2,400	6,772	13,432
Standard two-storey house	4,081	3,000	6,643	13,724
Executive two-storey house	4,994	4,400	10,195	19,589
Senior executive house	7,247	7,200	15,530	29,977
Weighted average cost[2]	4,233	3,180	7,497	14,910

1 Interest charges other than imputed interest, property taxes, insurance, and repairs.
2 Weights are, in order: .25, .25, .25, .15, .10.

Table 10

Homeowners' Housing Costs, Concept 1, Edmonton

	Cost items			
	Imputed interest (after tax)	Depreciation	Cash expenditure[1]	Total cost
	(Dollars)			
Standard townhouse	2,809	1,800	4,199	8,808
Detached bungalow	4,609	2,400	6,726	13,735
Standard two-storey house	4,687	3,000	7,089	14,776
Executive two-storey house	5,192	4,400	9,923	19,515
Senior executive house	8,542	7,200	16,511	32,253
Weighted average cost[2]	4,659	3,180	7,643	15,482

1 Interest charges other than imputed interest, property taxes, insurance, and repairs.
2 Weights are, in order: .25, .25, .25, .15, .10.

Table 11

Homeowners' Housing Costs, Concept 1, Vancouver

	Cost items			
	Imputed interest (after tax)	Depreciation	Cash expenditure[1]	Total cost
	(Dollars)			
Standard townhouse	5,146	1,800	6,913	13,859
Detached bungalow	7,309	2,400	9,549	19,258
Standard two-storey house	8,160	3,000	10,763	21,923
Executive two-storey house	8,366	4,400	14,104	26,870
Senior executive house	11,007	7,200	20,126	38,333
Weighted average cost[2]	7,509	3,180	10,934	21, 623

1 Interest charges other than imputed interest, property taxes, insurance, and repairs.
2 Weights are, in order: .25, .25, .25, .15, .10.

6.1.2 Nonhousing Costs in the Homeowners' Basket

Next, we calculate the nonhousing costs for homeowners. To do that we need to find the cost in each city of the nonhousing items that homeowners buy. We estimate this by the following procedure, in which we use Vancouver as an illustration.

From the Family Expenditure Survey, we know that roughly 80 per cent of total spending, on average across Canada, as defined by that survey, is directed towards nonhousing items. Applying this proportion to the total expenditure of homeowners in the survey, estimated as $38,000, gives us in the case of homeowners an estimate of $30,400 spent on the basket of nonhousing items, on average across Canada.

To obtain the amount that would need to be spent to buy this basket in Vancouver, we multiply the Canada average cost of $30,400 by the index for nonhousing items in Vancouver. That index is easily calculated, using the CPI weights for subcomponents of nonhousing expenditure, together with the Vancouver price indexes for each subcomponent (Table 12). In Vancouver, the resulting overall nonhousing price index was 100.5. Thus, the cost of the nonhousing items in Vancouver is estimated at $30,400 x 1.005 = $30,552.

Table 12

Indexes of Nonhousing Items in Vancouver, September 1988

	Vancouver price index	Weight in Canada basket
Food purchased from stores	102	12.51
Household operations	104	5.60
Household furnishings	104	4.80
Clothing	102	8.72
Transportation	97	17.87
Health	98	4.21
Recreation, reading, and education	100	9.04
Tobacco and alcohol	103	5.91
Food purchased in restaurants	99	5.08
Fuel and electricity for principal accommodation	99	3.23
Water	100	0.33
Nonprincipal accommodation	107	1.38
		78.68
Vancouver price index of nonhousing items[1]	100.5	

1 Weighted average of individual Vancouver price indexes, using Canada basket weights in column 2.

Source Estimates by the Economic Council of Canada, based on Statistics Canada, Consumer Prices and Price Indexes, July/September 1988, Cat. 62-010.

It will be recalled that the price indexes in Vancouver, for the subcomponents of nonhousing expenditure, shown in Table 12, come from published data for seven of the items listed (food purchased from stores, transportation, household operations [household furnishings, etc.]; recreation, reading, and education; health and personal care; tobacco and alcohol), and together account for 60 per cent of consumer spending on goods and services. For the remaining five items (clothing; food purchased in restaurants; fuel and electricity for principal accommodation; water; and nonprincipal accommodation) we used price indexes derived by methods explained in Chapters 4 and 5 and shown in Table 13.

To estimate nonhousing costs for other cities we followed the same procedure as for Vancouver. The resulting costs of the nonhousing component of the homeowners' basket are shown in Table 14.

Table 13

Selected Indexes of Price Levels, Selected Cities, Canada, September 1988

	St. John's	Charlottetown	Halifax	Saint John	Montreal	Toronto	Winnipeg	Regina	Edmonton	Vancouver
1 Clothing	108	97	100	96	97	104	103	96	96	102
2 Food purchased in restaurants	95	83	88	82	103	104	91	92	96	99
3 Fuel and electricity for principal accommodation	111	105	101	102	114	96	95	70	83	99
4 Water	65	72	94	82	140	119	127	110	94	100
5 Nonprincipal accommodation	89	89	103	79	89	112	95	90	90	107

Source Estimates by the Economic Council of Canada, based on Statistics Canada, Consumer Prices and Price Indexes, July/September 1988, Cat. 62-010.

Table 14

Cost to Homeowners of Nonhousing Components, Selected Cities, Canada

	Average relative price index	Cost of nonhousing items
		(Dollars)
St. John's	103.8	31,555
Charlottetown	96.2	29,245
Halifax	97.8	29,731
Saint John	97.0	29,488
Montreal	100.9	30,674
Toronto	103.5	31,464
Winnipeg	95.9	29,154
Regina	93.3	28,363
Edmonton	94.9	28,850
Vancouver	100.5	30,552

6.1.3 Capital Gains

The information in subsections 6.1.1 and 6.1.2 is sufficient to estimate costs of the standard homeowners' basket in each city, exclusive of capital gains, and therefore the "Concept 1" price indexes, which are indexes exclusive of those gains. To obtain "Concept 2" indexes, however, we need to know capital gains in each city.

Estimates of "normal" capital gains are shown in Table 15 (for the meaning of "normal," recall the discussion in subsection 3.2.7.1.). As discussed above, they are obtained as the product, for each city, of the price in 1988 of a "Canada basket" of owner-occupied houses, and the average tax-year percentage rate of increase in nominal value of that same basket. As can be seen, the Canadian basket yielded widely varying ten-year average gains, ranging from less than $9,000 in Edmonton and Regina to almost $40,000 in Toronto.

Table 15

Estimated Nominal Capital Gains, Selected Cities, Canada

	Average price of homes in the Canada basket, 1988[1]	Average increase in the nominal value of the Canada basket 1978-1988	Capital gains used in Concept 2 indexes[2]
	(Dollars)	(Per cent)	(Dollars)
St. John's	100,310	10.61	10,643
Charlottetown	108,500	12.03	13,053
Halifax	133,025	10.71	14,247
Saint John	111,725	11.29	12,614
Montreal	151,700	14.39	21,830
Toronto	265,750	14.21	37,763
Winnipeg	109,200	10.71	11,695
Regina	98,775	8.75	8,643
Edmonton	107,770	7.89	8,503
Vancouver	174,480	12.86	22,438

1 The Canada basket is 25 per cent of a standard townhouse, 25 per cent of a detached bungalow, 25 per cent of a standard two-storey house, 15 per cent of an executive two-storey house, and 10 per cent of a senior executive house.

2 These are estimates of the "normal" capital gains that are appropriate for inclusion in the price indexes, not actual capital gains in 1988.

6.1.4 Total Cost of the Homeowners' Basket

We can now add up, for each city, the costs of each component of the homeowner's standard basket. For Vancouver, for example, the costs are:

Housing costs excluding capital gains – $21,623
Nonhousing costs – $30,552
Capital gains – $22,438
Total cost for Concept 1, excluding capital gains – $52,175
Total cost for Concept 2, including capital gains as a 100-per-cent cost offset – $29,737

We obtain the Concept 1 and Concept 2 homeowner indexes for each city by dividing total cost for that city by the population-weighted average total cost.

Results for all ten cities are shown in rows 1 and 4 of Table 16.

6.2 Cost of the Renters' Basket

We turn now to renters, and how the cost of their "basket" varies by city. From the family expenditure survey, total spending by renters, on average across Canada, was approximately $25,000, of which roughly 80 per cent ($20,000) is spent on nonhousing items and $5,000 for rent. To obtain an index for renters in a particular city, we have to estimate separately what expenditure on nonrental items and rents would be.

We illustrate the method again with Vancouver. Nonrental costs would be $20,000 * 1.005 (same index as for homeowners) = $20,100. Rental costs are calculated as $5,000 * 1.069 (1.069 is our estimated rent index for Vancouver, see Table 1) = $5,345. It follows, therefore, that the cost of the renters' basket in Vancouver is $20,100 + $5,345 = $25,445. We proceed similarly for all ten cities.

As before, we obtain the indexes for renters in each city by dividing each of the expenditure numbers by the (population weighted) average expenditure, in this case $25,090. The results are shown in row 2, Table 16.

6.3 Overall Indexes

We now have indexes in each city of three kinds: for homeowners with and without capital gains as an offset to housing costs, and for renters.

We first reduce these three indexes for each city to two, by averaging across homeowners and renters. We need ideally to weight the price indexes for homeowners and renters by the proportions of homeowners and renters in Canada as a whole. Accurate data on this are hard to come by, so we assume, *faute de mieux*, that the number of homeowners and tenants was roughly the same. We consequently simply averaged the indexes for homeowners and renters. The results of this averaging yield two intercity cost of living indexes, which we show in row 3 of Table 16 as the overall index, Concept 1 (no capital gains allowed for), and in row 5 of Table 16 as the overall index, Concept 2 (capital gains allowed for at 100 per cent).

In Table 16, row 6, we show the average of Concepts 1 and 2. As discussed above, we think that this is the most reasonable price index. Comments on the various results follow in the next chapter.

7 Commentary on the Findings

How large, then, are the cost-of-living differences across the land, and how significant are they? Do they redress, at least in part, the cross-regional income disparities?

Table 16 shows the relevant information for answering these questions. As we have foreshadowed, much depends on which concept of the price index one thinks is most applicable, and this in turn depends on the treatment of capital gains.

If capital gains are ignored, we arrive at the city price indexes shown in row 3 of Table 16. The pattern is very clear. Toronto prices are well above average, at 111, and every other city is below average. Vancouver is only marginally below at 99, but all the others are significantly below, from 87 in Regina to 96 in Montreal. In sum, if capital gains are treated as irrelevant to housing costs, Toronto is far and away the most expensive place to live, and everywhere else except Vancouver is rather cheap. Vancouver is about average. This is certainly a strange picture, and reinforces our arguments above that the Concept 1 index is misleading.

At the other extreme, capital gains can be treated as a complete offset to housing costs. Doing so results in the Concept 2 index, the values of which for each city are shown in row 5 of Table 16.

Not surprisingly, the picture shown under the Concept 2 index is almost precisely the reverse of the one under the Concept 1 index. Toronto now appears as the cheapest place to live, at 5 per cent below the national average. St John's is the most expensive, at 13 per cent above average, followed by Edmonton at 9 per cent, and Halifax, Regina, and Winnipeg at 6 per cent above average. Only Charlottetown, Saint John, and Montreal are close to the average. In other words, when capital gains are allowed as a 100 per cent offset against housing costs, Toronto is the cheapest place to live in Canada, and nearly everywhere else is relatively expensive. These results seem as unreasonable as those obtained when capital gains are ignored.

We argued earlier that it is appropriate to weight capital gains at 50 per cent when considering them as an offset to housing costs. The result of following this procedure is an index which is the unweighted average of Concepts 1 and 2, and the values of it for each city are shown in row 6 of Table 16. With this index, Toronto and St John's are tied as the most expensive places in Canada, but only marginally so, the index for each being 103. Vancouver is also slightly above average at 101, while Halifax is at precisely 100. The remaining cities are below average, but again, usually only slightly so. Winnipeg is at 98 and Edmonton at 99, Montreal and Regina at 97, and Charlottetown and Saint John

Table 16

Differences in Price Levels in Selected Canadian Cities, Concepts 1 and 2, Canada

	St. John's	Charlottetown	Halifax	Saint John	Montreal	Toronto	Winnipeg	Regina	Edmonton	Vancouver
1 Homeowners, total basket Concept 1	87	83	88	83	94	117	85	81	83	97
2 Renters, total basket	100	94	98	93	98	105	95	92	94	101
3 Overall index, Concept 1	94	89	93	88	96	111	90	87	88	99
4 Homeowners, total basket Concept 2	125	109	114	110	100	86	117	120	124	103
5 Overall index, Concept 2	113	101	106	102	99	95	106	106	109	102
6 Average of Concept 1 and 2 overall index	103	95	100	95	97	103	98	97	99	101

at 95. There is a spread of only 6 points between the most expensive city and the cheapest.

What we consider the most appropriate indexes show, therefore, that inter-city differences in living costs are exceedingly minor. We think that this is most likely to be the true situation, while conceding that this conclusion is based on a methodology for evaluating capital gains that is less rigorous than we would like.

Notes

1 J.R. Melvin, "Regional inequalities in Canada: Underlying causes and policy implications," *Canadian Public Policy*, 13, no. 3: 306.

2 For an excellent survey of these problems, and of price index theory in general, see Robert A. Pollak, "The theory of the cost-of-living index," in Section 2, *Price Level Measurement: Proceedings from a Conference Sponsored by Statistics Canada*, W.E. Diewert and C. Montmarquette, eds. (Ottawa: Supply and Services Canada, 1983).

3 A referee points out also that the possibility of capital gains is not the only financial difference between owning and renting. He notes that the certainty of tenure provided by owner-occupied housing is an element of household production functions which allows owner-occupiers to enhance the productivity of time spent (outside the market economy) in increasing the consumption value of their homes. This is untaxed income which is not available to renters, and which further offsets the market cost of home ownership.

4 For further discussion of the issue of whether renting and ownership can legitimately be viewed as equivalent or not, see Masako N. Darrough, "The treatment of housing in a cost-of-living index: Rental equivalence and user cost," in Section 3, *Price Level Measurement*. We interpret Darrough's work as supporting our position that renting and owning cannot be viewed as equivalent.

5 After we went to press Statistics Canada advised us that a computer error had occurred in the tabulation of the rent data which were supplied to us. While correcting this error would change the numbers in our estimates of rental costs and the subsequent computations, rough calculations indicate that the effect on the final indexes, and the consequent conclusions based on these indexes, would be negligible.

6 Statistics Canada, Intercensal Annual Estimates of Population for Census Divisions and Census Metropolitan Areas, 1981-86, Cat. 91-521 (Ottawa: Supply and Services Canada, 1989).

7 Some additional qualifications are appropriate, for which we are indebted to a referee. There is an interaction between rents and commuting costs (commuters presumably are relatively indifferent among at least a subset of locations within each urban area, given tradeoffs between commuting costs and rents); average commuting costs are higher in the larger metropolitan areas because of greater time spent in commuting, and these time costs are not incorporated in the Consumer Price Index, even if transportation cost weights correctly reflect these differences. This effect will be reflected in higher *average* rents in large metropolitan areas with no excess supplies of housing stock (e.g.; Toronto and Vancouver), but this will only partially compensate for the bias in the other direction resulting from the omission of the value of time spent in commuting.

8 Royal LePage Survey of Canadian House Prices, Spring 1989. This issue was used because it contains the historical series, as well as recent prices of housing. These complement well the September 1988 data on intercity retail price differentials and Canada CPI weights, as published by Statistics Canada, "Consumer prices and price indexes," July-September 1988, Cat. 62-010. We are grateful to Royal LePage for making this data available to us.

9 The assumption of one half is arbitrary, but any error resulting from this is not serious, since we also count forgone interest on equity as a cost at 10.75 per cent (see Chapter 4).

10 Recall that all these figures apply to 1988, the latest year for which comprehensive data were available to construct the intercity price index as a whole.

11 If our index were to be calculated every year we would recommend following the cleaner practice of using actual gains, rather than an arbitrary concept of "normal" gains, because abnormally high gains in some years would be balanced by abnormally low gains in others. The resulting years of low and high costs could then be averaged to get a better picture. Since we shall not be calculating indexes for every year, it seemed on balance better to do the averaging on the capital gains.

12 Report of the Royal Commission on Taxation, 1966.

13 These weights are more arbitrary than we would prefer, but data to improve them were not available. The weighting problem is more complicated than discussed here due to the existence of large numbers of owner-occupier households who have not recently purchased their house. The expenditure survey is a sample of all residents; the imputation of income from house prices and mortgage company rules applies only to owner-occupiers who have purchased at current market prices. Thus, we may be calculating, in each city, the cost of a housing basket that is a bit different from the real one being purchased, on average across Canada. It is nevertheless a reasonably plausible basket, and even if not exactly right, will give a good guide to intercity housing cost variations, which is what we need.

14 Comments expressed by an anonymous referee contributed greatly to the overall improvement of our originally estimated sales tax based index.

15 Canadian Tax Foundation, *Tax Memo*, various years.

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